

2020: A Good Year for Polymer Banknotes

Competition creates energy and change. It can be argued that 2020 was the year where the impact of there being two suppliers of polymer substrate in the banknote market started to be seen. The take-up of polymer by central banks accelerated, while investment brought new security features to market, more capacity and more recycling capability.

The history of polymer banknotes is well known. The Reserve Bank of Australia first issued a commemorative polymer note on Guardian™ in 1988, followed by a circulating \$5 banknote in 1992, with the number of banknotes on polymer steadily growing over the next 25 years.

Large scale adoption of polymer by major currencies, including Vietnam, Romania, Singapore, Hong Kong, Mexico, and Canada meant that – by 2011 – the use of polymer had spread worldwide. The latter was particularly significant because not only was it the first G7 country to adopt polymer, but it made explicit that its decision was based as much on the security offered by the substrate as its durability.

CCL Secure's Guardian™ polymer substrate was responsible for this growth and, in 2013, was joined by another polymer option – De La Rue's SAFEGUARD®, which made its debut on the Fiji \$5.

The growth has continued to accelerate. By early 2021, polymer accounted for 3% of banknotes by volume and 14% percent by number of circulating denominations. Over 50 banknote issuing authorities now issue at least one polymer banknote. 147 circulating banknote denominations are now, or will very shortly be, issued on polymer, up from c. 25 in 2010.

This marks a sixfold increase in a decade. Of this number, in denominations, roughly twice as many are produced on Guardian as on SAFEGUARD. But of those issued since 2013, when De La Rue entered the market, around twice as many denominations have been introduced on SAFEGUARD. With two suppliers available, the number of polymer denominations has tripled since 2013.



Along with circulating notes, approximately 40 commemorative notes have also been issued since polymer was first introduced.

In a year that has seen an acceleration in the number of banknotes converted to a polymer substrate, several trends stand out.

Confidence

The uptake in polymer demonstrates that there is widespread confidence in polymer among a range of central banks, denominational values and continents.

- In total, 15 note issuing authorities issued new polymer notes – 11 for circulating notes (four of which for the first time), and a further four for commemorative notes (see chart below).
- Trinidad and Tobago and the East Caribbean states now join the 11 other countries who have already made the transition to all polymer series, while Costa Rica and the Bank of England will complete the move of their whole series to polymer this year.
- England and Mexico are introducing high value denominations on polymer. Again, this shows confidence in the security of the notes, especially when combined with the issuing authorities who have their complete series on polymer.

- The move by Angola and the Saudi Central Bank to introduce polymer is an important one, since both are high volumes users of banknotes. Egypt, another high volume country, has also announced the introduction of a polymer denomination later this year.

Dual supply expands choice

The ability to source polymer banknotes from two sources – with further options already being developed – helps to address any concerns that central banks may have had about converting to polymer and being reliant on a single supplier.

The increased acceptance of polymer appears to be driven by a number of factors, not least the growing evidence which demonstrates both the performance benefits and cost savings that can be achieved by adopting polymer.

The influence of existing polymer users is also important: the decision by the Bank of England to adopt polymer, for instance, clearly influenced similar decisions made by other issuing authorities in the United Kingdom, in Scotland and Northern Ireland, whilst its own decision had been influenced by the Canadians.

Sensing the growing interest in polymer, 2020 saw both CCL Secure and De La Rue run informational webinars and other communications to feed the interest of banks and issuing authorities worldwide.

And just last month, the Bank of England awarded its second substrate supply tranche under its framework agreement with both companies. Between them, De La Rue and CCL Secure provide all of the substrate for the Bank's £5, £10, £20 and soon-to-be-launched £50 production, with CCL Secure retaining 75% of the highest volume denomination, the £20, and De La Rue receiving 65% of the £5, £10 and £50 production.

Guardian™	SAFEGUARD®
Circulating Banknotes National Bank of Angola Reserve Bank of Australia Central Bank of Costa Rica Bank of England Banco de México The Saudi Central Bank	Circulating Banknotes National Bank of Angola East Caribbean Central Bank Bank of England Bank of Ireland, Northern Bank and Ulster Bank <i>(Northern Ireland)</i> Bank of Scotland, RBS, Clydesdale Bank <i>(Scotland)</i> Central Bank of Trinidad & Tobago Central Bank of Uruguay
Commemorative Banknotes Banque du Liban Bank of Namibia Central Bank of Nicaragua	Commemorative Banknotes Reserve Bank of Fiji

Countries issuing one or more denominations on Guardian or SAFEGUARD polymer in 2020.



Recycled polymer banknotes in the form of plastic pellets which are then turned into various household products (© CCL Secure).

Expanded market choice and increasing awareness of the benefits of polymer are behind some fundamental changes in attitudes and procurement practices within the commercial sector. Established papermakers/printers source polymer from both De La Rue and CCL Secure. De La Rue – via its printing arm – even uses CCL’s Guardian for some clients.

Angola, for instance, let its preferred printers select their own substrate suppliers. Another example is Oberthur Fiduciaire, which printed for Uruguay but chose its own polymer supplier.

There are now several instances across Asia, Africa, Europe and the Americas of countries who dual source Guardian and SAFEGUARD, or who have switched the polymer substrate between the two suppliers.

Debunking myths

2020 was also the year where there were attempts to debunk industry myths. Part of the effort was addressing the perceived COVID-19 related risk of handling banknotes (not just polymer).

A lot of effort went into providing evidence that COVID-19 related risks were extremely low for handling all banknotes – comparable or lower, in fact, than other physical objects such as mobile phone screens, keypads on point-of-sale terminals and touch screens on automated checkouts. CCL Secure, for instance, established an end-user facing website – truthaboutplasticbanknotes.com – which addressed many of these myths head on and promoted the benefits of polymer to the wider public.

Another polymer-specific misconception that was countered in 2020 was the claim that polymer was harder to print on than paper banknotes. Malcolm McDowell, Chief Executive Officer Note Printing Australia and Peter Viney, Plant Manager at the Bank of England’s Debden site both stated during the year that printing speeds can be maintained once equipment has been optimised for polymer. In fact, both pointed out that polymer brings advantages such as a more stable substrate enabling a narrower printing operating window.

Currency News ran an expert opinion piece on this topic in the December 2020 edition, highlighting how machines can run at speeds of up to 10,000 sheets per hour on polymer and showing that anti-static is not required once the set-up has been optimised.

Investment in capacity, the environment

With five production lines across three locations worldwide, CCL Secure is the dominant manufacturer of polymer substrate. But De La Rue is catching up – last month it announced that it is expanding its UK security features and polymer production site to more than double its capacity for polymer substrate, with plans to create a Centre of Excellence for polymer substrate production by the end of 2021.

Between them the two companies are clearly gearing up to meet a growing global demand for polymer.

The increasing need for a more environmentally sustainable approach also plays in favour of polymer. Both companies have put considerable effort into explaining the environment benefits of polymer, which is consistently highlighted by lifecycle analysis. The more durable substrate means that fewer notes need replacing and the demand on raw materials is reduced. It also means that notes remain in circulation for longer, with consequent reduction in transport and processing – with all else being equal, banknotes are recycled more locally and have to be transported less frequently to a central site for destruction and replacement.

Environmental sustainability initiatives are not new in the polymer banknote industry. CCL Secure has been providing support to central banks for many years through its Guardian Global Recycling Program, which helps banks to establish recycling programs locally, leading to both environmental and social benefits.

More recently, with the opening of the Zacapu recycling plant in Mexico, CCL now provides recycling at all of its production facilities worldwide. The recycling process transforms old polymer banknotes into polypropylene pellets for use in a wide range of new plastic products, including garden furniture, building materials and long-life clothing.

For De La Rue, with 100% of its UK polymer waste recycled and also supporting banks to establish recycling solutions, the message to customers in 2020 has been about the optimal solution depending on individual situations.

For instance, it reports a surprisingly low carbon footprint associated with shipping polymer waste for recycling, which opens up viable recycling providers.

The Carbon Trust has certified that the carbon footprint on the Bank of England polymer ‘fiver’ is 16% lower than its paper predecessor. Furthermore, because polymer is part of a closed system (people don’t throw away banknotes), the notes are returned to the central bank at the end of their life, enabling polymer banknotes to be recycled.

New security features

Polymer security features have also seen advances. In 2020, CCL launched Cinema™ and Vivid™ Colour. The Cinema feature adds three-dimensional and movement effects integrated directly to the polymer substrate, while Vivid transforms a plain white image into full colour when seen under UV light.

Whilst CCL’s security features are, by definition, polymer-based, most paper-based security features also work equally well in polymer. In addition, there is a growing trend for features to be either optimised or developed specifically for polymer. An example of the latter is De La Rue’s SAFEGUARD ARGENTUM silver feature, which enables mirror-like free-form shapes to be incorporated into the substrate.



Polymer notes have also resulted in a resurgence in the use of holograms (or Kinegrams) in both patch and stripe format – the smoothness of the substrate providing an optimal surface for the features, enhanced by the presence of one or more windows, whereby different diffractive effects can be viewed from either side of the note. This resurgence has spilled over to paper notes too; according to De La Rue, which also produces holograms, 38% of all the banknotes (paper and polymer) it designed that were issued in 2020 carried a holographic patch or stripe.

Continued on page 12 >

A Good Year for Polymer

(Continued)

Even more choice?

Whilst the market is currently being driven, and shared, by CCL Secure and De La Rue, there are other potential suppliers in the wings.

The Central Bank of Russia introduced its own polymer commemorative banknote for the Sochi Winter Olympics and it is believed to be continuing its work on polymer. China Banknote Printing and Minting Corporation is said to have its own polymer substrate, although this has yet to make an appearance in China's banknotes. And in 2020, Spectra Systems announced that it was introducing a polymer substrate.

The future

But whilst 2020 was undoubtedly a very good year for Guardian and SAFEGUARD, is the world really converting to polymer?

Clearly, we will see many more banknotes transition onto polymer substrate in 2021. Some central banks have already announced their intention to do so. During a De La Rue webinar in 2020, 67% of 102 banknote issuing authority and state printing work representatives stated they were 'likely' or 'very likely' to transition to polymer banknotes when polled.

It is important to point out that paper remains the substrate used for the majority of banknotes in the world, and the level of innovation around security features and durability remains extremely high. Polymer will not have everything its own way, therefore.

But the future points towards an increasingly important role for polymer, particularly as cost, durability and sustainability will be key factors in decision-making.

The big question is whether CCL Secure and De La Rue will have this growing market to themselves. Or will, as is equally likely, we see more polymer providers enter the market?

Shrap Offers a Future Without Coins

The slide features the Shrap logo in the top right corner. It is divided into four columns, each with an icon and a heading:
1. **Freedom**: Icon of hands holding a coin. Text: 'Cash gives people and businesses the ability to transact freely, without a middleman taking a fee for each transaction'.
2. **Anonymity**: Icon of two figures with question marks. Text: 'Cash enables people to transact anonymously, without being tracked, monitored, and their data monetised'.
3. **Stability**: Icon of a balance scale. Text: 'Cash represents a common measure and store of value, and provides its users with a sense of security'.
4. **Accessibility**: Icon of an elderly person. Text: 'Cash is inclusive of everyone in society, without any barriers – socio-economic or technical – to its use'.
A circular portrait of Chris Forero-Slee is in the top right. Below it, the text 'Our Sponsors' is followed by logos for 'CashEssentials', 'GLORY', and 'PROSEGUR'. The bottom of the slide has the text 'The Future of Cash Online' and a small number '4'.

At the Future of Cash conference, Chris Forero-Slee introduced his business, Shrap. As he said, he does not expect to be popular with those who make their living from or who like coins. Shrap (the company presumably takes its name from shrapnel, ie. fragments of shells or bullets but also a colloquial term for small change) is a solution that offers an alternative to coins, which they regard as a 'pain point' in payments.

The presentation started by considering why coins are regarded as a problem, whether for the retailer or others. For the retailer, the time they take to handle, count and manage, along with losses from the till. For central banks, the cost of the denomination for which the face value does not cover the cost of manufacture (which Chris stated was some \$70 million per year for the US), the challenge of managing the cash cycle and the costs and challenges of managing coin when and if it returns.

Coins are generally regarded as inefficient to handle and count, heavy and dirty to handle and transport and difficult to manage – almost a one-way payment means, as the US and others found in the pandemic.

Having painted this gloomy picture, the presentation went on to consider on one hand the convenience, efficiency, (perceived) security and hygiene of digital payments, and on the other the loss of privacy, the risk of exclusion and people not managing their budgets that it brings.

But he posited that for a substantial minority of consumers, digital payments are not a 'win'. If cash is used less, whatever replaces it must work for all, people must be free to choose the freedom of paying without a middleman (and their fees), anonymously, with the stability that comes from a sense of security and with something that is accessible to all.

Shrap's solution – described as a hybrid app/card-based replacement for coins – suggests a route to a 'coinless', rather than a cashless, society. It enables users to spend in cash but instead of receiving physical coin as change, they receive their change electronically and instantly in Shrap. Participating retailers set up a digital float, which is directly debited when change is issued.

In other words, you pay for your purchase and the change goes into a 'wallet' that carries the value. Lose the wallet, lose the value. The wallet, which could be on your phone, but could also be a 'Shrap card', allows you to use the coin value on it to pay or to transfer to another wallet or even into your bank account. Apart from the last of these, there is no fee to do this.

South Korea's coinless initiative

This isn't the first such initiative to replace coins. In 2017, the Bank of Korea initiated a pilot among 36,000 convenience stores, as part of its 'Payment System Policy Roadmap – Vision 2020, enabling customers to receive small change in the form of top-ups onto pre-paid cards. The objective was to 'ease the inconvenience of using and carrying coins and reduce the social costs incurred in their circulation and management'.

The pilot was the first of its kind in the world. Despite the results of a survey prior to the pilot, in which the majority of respondents said they did not like receiving coin as change, the response to the pilot itself among the public was lukewarm. That response notwithstanding, the Bank continued with the programme, expanding it to major retailers in the country in 2020, but also allowing change to be credited to consumers, bank accounts, rather than just prepaid cards.

At that time, the Bank stated that the 'change deposit service' had been used in over 30 million purchases since its launch.